

# Parks and Trails

## Health Impact Assessment Toolkit - (11/2014)

[http://www.cdc.gov/healthyplaces/parks\\_trails/](http://www.cdc.gov/healthyplaces/parks_trails/)

### Introduction

Well-designed parks and trails are valued parts of our environment. Research examining the connection between parks, trails, and health has helped identify the value that parks provide to people. Parks and trails can promote physical activity and community engagement; and provide both environmental and mental health benefits. When well-designed, parks have been shown to reduce stress and foster community interaction. They can also protect sensitive lands such as flood plains and steep slopes.

Parks and trails can provide resources most communities need when addressing many of today's public health problems. And when questions arise about community policies or projects related to parks and trails—particularly, how to maximize their positive impact on public health—a health impact assessment (HIA) can provide answers.

### What is a Health Impact Assessment?

A health impact assessment (HIA) is “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.”<sup>1</sup>

An HIA evaluates objectively the potential health effects of a policy or project before it begins. An HIA can recommend measures to increase positive health outcomes and decrease adverse health outcomes. The HIA framework can bring potential public health effects and considerations into the decision-making process for plans, projects, and policies that fall outside of traditional public health arenas, such as parks and trails. The U.S. Department of Health and Human Services recommends the HIA as a planning resource.

#### The major steps in conducting an HIA are:

- Screening—would an HIA be useful? If all the decisions have been made, an HIA probably is not appropriate. If HIA findings most likely would not change any decisions, an HIA would not be useful.
- Scoping—identify which health effects to consider and by what methods.
- Assessing risks and benefits—identify who might be affected and how they might be affected. Use data and research to determine the likelihood, direction, magnitude, and distribution of potential health effects.
- Developing recommendations—suggest changes to proposals to promote positive health effects or minimize adverse health effects.
- Reporting—present the results to decision makers and the public.
- Evaluating—determine whether the HIA will affect public health decisions and the actual effects of those decisions.

### What is the Burden of Disease?

Parks can affect a range of public health issues, including injuries, mental health, and pollution exposures. An important interaction between parks and health is through physical activity. In the United States, most people do not get enough physical activity. The Centers for Disease Control and Prevention (CDC) recommends that children have at least 60 minutes of physical activity per day. Yet, more than 80 percent of adolescents in the United States do not achieve this minimum, and more than 25 percent of adults report no leisure-time physical activity.<sup>2</sup>

For all weight levels, physical activity alone can improve health outcomes. In addition, physical activity can help prevent obesity. In the 1960s, obesity rates for children 6 to 11 years old were around 4 percent<sup>3</sup>. By 2010, obesity rates had increased to 18 percent<sup>4</sup>. This is not just a childhood problem; in 2010 more than 69 percent of the United States adult population was overweight<sup>5</sup>.

#### Physical inactivity and obesity are independent risk factors for many of the same diseases, including

- Cancer
- Diabetes
- Heart disease
- Stroke
- Joint and bone disease
- Depression<sup>6,7,8</sup>

## Parks and Health

### Parks and trails can improve health in several ways including:

- Increased physical activity- walkable access to appropriate sites motivates people to participate in physical activity and to do so more frequently;
- Improved mental health- parks can serve as a venue for stress reduction;
- Environmental benefits- parks can reduce air and water pollution, protect hazard areas (e.g., flood plains, unstable slopes) from inappropriate development, and mitigate urban heat islands;
- Community interaction- parks can provide meeting places for neighbors;
- Reduce injury- parks and trails can provide safe spaces for people to play and exercise, away from busy streets and commercial zones.

People who are exposed to the greenest environments also have the lowest levels of health inequality among low-income households. Physical environments, like parks and trails, that promote good health might be important to reduce socioeconomic health inequalities.

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Even though parks can be important health-promoting components of communities, they can also create community concerns. In some places, parks can be viewed as a place for crime or illegal activity; there may be concerns about injuries at the park or by people traveling to the park; or there may be competing development interests. All of these issues are important to consider and can be informed by an HIA.

## Why Do a Park or Trail HIA?

Parks are relatively large investments that serve multiple purposes, including health promotion. Identifying how a park can most effectively improve health could lead to a more efficient use of resources. Health impact assessment can help. Trails are one example:

- If the community has hiking trails, the trails can encourage physical activity that can help improve cardiovascular health.
- If the trails provide a means of pedestrian travel away from traffic, the design may also help reduce exposure to air pollution and decrease the risk of injury.
- Trail design can help protect streams and improve water quality by capturing the first flush runoff from low-level storms and filtering non-point source pollutants.
- Setting aside space for canopy trees can reduce some of the effects of urban heat islands.

A health impact assessment can help policymakers appreciate and address the potential health effects of a proposed policy or plan before it's put into practice or of a project before it's built. That parks and trails promote public health is generally understood—an increasing volume of research supports that understanding. So why conduct an HIA? Because it can answer questions such as:

- How can we design park and trail policy, planning, and project decisions to promote health as much as possible?
- What is the health impact of not accomplishing the project or carrying out the policy?
- What happens when parks and trails are not accessible to vulnerable populations?
- Do some park or trail features provide greater public health benefits than others?
- What are the barriers to park or trail initiatives that might prevent them from supporting health?
- As an initiative moves forward, what are its most important public health outcomes?
- Which features should be priorities?

Understanding a community's background and its health issues can help target community resources. An HIA can uncover potential barriers to realization of full positive health impacts and suggest alternatives. An HIA can help address concerns about safety and management. And an HIA can promote a health culture. Such a health culture could help implement practices to assure that everyone—regardless of age, ethnicity or race or income or ability—can enjoy parks and trails frequently, easily, and safely.

## Points of Intervention

Planning for a healthier community can involve many stages. Below are some points of intervention when community decisions that affect parks may be made:

- Comprehensive plans, also called general plans, set the community's vision for development over 10 to 50 years.
- Capital improvement budgets identify projects funded and constructed within a specific funding cycle.
- Park and trail master plans and park design initiatives respond to specific opportunities.

- Park advisory board and advocacy group meetings offer opportunities for the discussion of the health impacts of parks and trails.

An HIA can inform a decision at any one of these stages. The HIA process can encourage all stakeholders to work together to reduce negative outcomes and to promote positive changes.

<sup>1</sup> 1999 Gothenburg consensus statement: <http://www.euro.who.int/en/what-we-do/health-topics/environmental-health/health-impact-assessment> [Accessed 2013 Nov 18]

<sup>2</sup> Centers for Disease Control and Prevention. State Indicator Report on Physical Activity. 2010. Atlanta, GA: U.S. Department of Health and Human Services, 2010. p 122

<sup>3</sup> Ogden, C and Carroll, M. 2010. "Prevalence of Obesity Among Children and Adolescents: United States, Trends 1963–1965 Through 2007–2008" National Center for Health Statistics, p5, [http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_07\\_08/obesity\\_child\\_07\\_08.pdf](http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.pdf) [Accessed 2013 Nov 18]

<sup>4</sup> Ogden, C and Carroll, M. 2010. "Prevalence of Obesity in the United States, 2009–2010" National Center for Health Statistics, figure 2, <http://www.cdc.gov/nchs/data/databriefs/db82.pdf> [Accessed 2013 Nov 18]

<sup>5</sup> <http://www.cdc.gov/nchs/fastats/overwt.htm> [Accessed 2013 July]

<sup>6</sup> Dannenberg, A, Frumkin, H, and Jackson, R. 2011. Making Healthy Places: Designing and Building for Health, Well-being, and Sustainability, Island Press

<sup>7</sup> CDC Physical Inactivity Estimates <http://www.cdc.gov/Features/dsPhysicalInactivity/> [Accessed July 25, 2013]

<sup>8</sup> Heart and Stroke Foundation [http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.3484171/k.AC67/Stroke\\_\\_Physical\\_inactivity.htm](http://www.heartandstroke.com/site/c.iklQLcMWJtE/b.3484171/k.AC67/Stroke__Physical_inactivity.htm) [Accessed July 25, 2013]

<sup>9</sup> Mitchell, R and Popham, F. 2008. "Effect of exposure to natural environment on health inequities: an observational population study." The Lancet vol 372

## The Toolkit

This toolkit can assist in the development of HIAs with park and trail components. It provides a framework for public health departments, city planners, project managers, and other stakeholders to work together. The HIA process identifies possible stakeholders, lists possible baseline datasets, and compiles potential recommendations from existing HIAs, linking them to cited evidence.

Bringing information from different disciplines into one document can assist decision-makers who wish to use the HIA process to evaluate a policy, plan, or project that includes a park or trail. It can support the scoping, assessment, and recommendation steps.

### The toolkit is divided into four sections:

- 1. **Section A: Stakeholders – Subject Matter Experts** — lists categories of people who might be included as stakeholders or subject matter experts.
- 2. **Section B: Data** — suggests types of baseline data that might be included and where they can be obtained.
- 3. **Section C: Common HIA Recommendations** — is based on a review of 11 HIAs that addressed park and/or trail development and lists common HIA recommendations for health issues associated with park and trail projects. The section includes references and studies that support these recommendations.
- 4. **Section D: Additional Topic Areas** — includes extra topics and resources that may provide background for future HIAs. Communities may want to consider these additional recommendations that were not included in the eleven source HIAs.

### Appendices

- **Appendix A**– Method used to develop toolkit content
- **Appendix B** - Health Impact Assessments reviewed for the HIA Parks and Trails HIA Toolkit

## Section A: Stakeholders – Subject Matter Experts

Stakeholders and subject matter experts are crucial to the development of an HIA. Therefore, we have included a list of stakeholders who might be part of the HIA team. These people could be asked to provide technical assistance or to be interviewed about their perspectives. Your HIA may not include everyone on this list, and you may want to include groups not named here. People leading an HIA should carefully consider whom to include with the goal of understanding health impacts that may not be addressed as part of a standard review process.

### Consider including:

#### *People who will be directly affected by the decision*

- Existing and potential users
- Neighbors; adjacent property owners
- People whose access might be affected by the decision

#### *Organizations that might participate in the HIA*

- Board of Health/Health Institutes / Hospital Board
- Chambers of Commerce
- Elementary, middle, and high schools, public and private schools (connect the project with institutions serving a common user group. They could help evaluate park access particularly entrance locations and walk-bike routes. They may also assist with joint use agreements.)
- Health department (potential HIA lead)
- Land banks
- Libraries (opportunities for programming and co-location)
- Local colleges and universities (may help evaluate framework and with technical assistance)
- Local foundations
- Local merchants who support civic projects
- Neighborhood/civic associations
- Neighboring site managers (connectivity/complete safe routes)
- Parks and recreation department (potential project lead)
- Planning/development (land development policies, adjacent natural surveillance, abutting pedestrian-friendly streets, entrance points and access routes, connected street patterns, reviews, and incentives to create accessible public space)
- Police patrol (to increase park safety among users and residents close to park site)
- Public works/transportation (sidewalks and connectivity, street design)
- Regional planning agencies
- Schools of:
  - Public Health/Nursing (could help identify and obtain pertinent public health data)
  - Planning/Landscape Architecture/Architecture/Environmental Design/Urban Design Programs (mapping and analysis)
- Social service agencies (YMCA/YWCAs, Boys/Girls Clubs, health clubs, schools, senior centers, after-school programs, health department)
- Water management (rainwater, sewer, water quality)

## Section B: Data

Data can demonstrate how parks and trails relate to communities. Mapping the location of parks and their geographic relationship to areas of community concern can provide valuable insights for decisions. In particular, health data can help focus attention on service needs by identifying at-risk and underserved populations.

Hint- Setting up a framework and plan to evaluate the impact of the HIA early in the process informs both the effects of the decisions and the HIA itself. Identifying who will be responsible for the follow-up evaluation at the beginning of the HIA process makes follow-up more likely to happen.

### Baseline data/information sources to consider

Topic	Local data sources	National data sources	Notes
<b>Physical Park Characteristics</b>			
Existing parks and trails	Parks and Recreation inventories Planning Department inventories	<u>PAD-US USGS Protected Areas Data</u> <a href="http://gapanalysis.usgs.gov/">http://gapanalysis.usgs.gov/</a>	May want to identify: - Sites with organized programs with supervision or regular staff - Sites with informal activities and easy-access walking routes
Walking access	Park inventory GIS analysis Street maps Walk route maps	Aerial photographs	Map park and trail entrances and the walk routes serving them. Identify areas with less than ½ mile walk routes to park entrances.  Sites with large differences between the number of people living within 0.5 miles of a park boundary and the number who have less than a 0.5 mile walk along a walk route to a park or trail entrance can be reviewed for addition access points and route improvements.
Views of entrances and exits of a site	Site visits Photos linked to GPS data points	Aerial photographs	Better visibility of park and trail entrances may increase use  Smart phones with the ability to capture GPS points can help identify these locations
Existing site conditions - Topography - Vegetation—tree lines and specimen trees - Wetlands/flood plains - Water—streams, ponds, shore lines	Site visits Street maps Parks and recreation department Planning department—maps and site analysis information	Aerial photographs <u>FEMA flood insurance maps</u> <u>USGS Quad sheets</u>	Understanding existing site conditions assists in the identification of opportunities and constraints unique to particular sites

<ul style="list-style-type: none"> <li>- Adjacent streets</li> <li>- Adjacent land use</li> <li>- Play structures</li> <li>- Fields</li> </ul>			
<b>Safety Characteristics</b>			
Crime <ul style="list-style-type: none"> <li>- Violent and property crime incidents in parks and adjacent neighborhoods</li> </ul>	Public Safety or Police Departments reports		Crime and safety issues are often major concerns. Knowing the crime patterns in and around the project can lead to insights about whether this is a problem and strategies to address key issues.
Natural surveillance <ul style="list-style-type: none"> <li>- Views into and within a site that ensure visibility for safety and emergency activities</li> </ul>	Audits by Crime Prevention through environmental design trained staff. (Personnel with this training are often associated with Police/Public Safety Departments.)		Highly visible public areas typically experience less crime than secluded sites.
Crashes <ul style="list-style-type: none"> <li>- Motor vehicle crashes within a walkable distance</li> <li>- Pedestrian injuries and fatalities</li> <li>- Bicycle injuries and fatalities</li> </ul>	Public Safety/ Police reports Transportation Department reports Public Works reports	<a href="#"><u>National Highway Traffic Safety Administration (NHTSA)</u></a>	Helps determine if and where traffic calming is needed
<b>Neighborhood Characteristics</b>			
Demographic data and Community profiles	Planning Department reports	<a href="#"><u>U.S. Census American Community Survey Vital Statistics</u></a>	Age groups, economic, race, ethnic, single mothers, living in multi-family or very dense housing
Neighborhood context <ul style="list-style-type: none"> <li>- Vacant land</li> <li>- Tax exempt properties</li> <li>- Foreclosed properties</li> <li>- Type of ownership</li> </ul>	Tax Commissioner maps		Provides a visual representation of neighborhood economic vitality as well as potential sites for new entry points, new or expanded parks, and street network connections
Neighborhood organizations Important	Obtain lists of contacts		Identify potential partners:

features/services within the community that may have a relationship with a park or trail	<p>from such sources as</p> <ul style="list-style-type: none"> <li>- Planning Department,</li> <li>- Parks and Recreation Department</li> <li>- Community Development Department</li> <li>- United Way</li> <li>- Health Department</li> </ul>		<ul style="list-style-type: none"> <li>- Schools</li> <li>- Churches</li> <li>- Businesses</li> <li>- Hospitals/clinics</li> <li>- Civic organizations</li> </ul>
<p>Pedestrian and bike route analysis</p> <p>Map routes to logical destinations, such as from park entrances to school entrances</p>	<p>Planning Department maps</p> <p>Metropolitan Planning Organization maps</p> <p>Local university maps</p>		Demonstrates opportunities to improve connectivity
<p>Photographs</p> <p>Images of opportunities and barriers within the service area</p>	Stakeholders or other interested groups		Ensure photographs are keyed, with brief statements of their significance and the locations are mapped
<b>Public Health Characteristics</b>			
Disease Prevalence Data	<p>Health Department/Board of Health data reports</p> <p>Hospital community assessments</p> <p>Insurance provider community profiles/assessments</p>	<p><a href="#">Behavioral Risk Factor Surveillance System (BRFSS)</a></p> <p><a href="#">Youth Risk Behavior Surveillance System (YRBSS)</a></p> <p><a href="#">National Environmental Public Health Tracking Program</a></p> <p><a href="#">Community Commons</a></p> <p><a href="#">County Health Rankings</a></p>	<p>For the service area and the community as a whole:</p> <ul style="list-style-type: none"> <li>-Mortality rates</li> <li>-% overweight children</li> <li>-Diabetes mortality rates</li> <li>-Asthma hospitalization rates</li> <li>-Heart disease mortality rates</li> <li>-Depression hospitalization rates</li> <li>-Unintentional injury rates</li> <li>-% low birthrate babies</li> <li>-% of babies born to unwed mothers</li> <li>-Inactivity rates</li> </ul>
Evaluation	<p>Universities</p> <p>Health Department/Board of Health</p> <p>Nonprofit organizations</p>	<a href="#">RWJ Active Living</a>	<p>Identify the health goals of the initiative; determine how they will be measured; state what will be considered success; and establish an evaluation process.</p> <p>Organize and prepare to capture pre- and post-project data for evaluation</p>

## Section C: Common HIA Recommendations

Section C contains recommendations for health issues associated with park and trail projects and policies. These recommendations were gathered from 11 HIAs that focused on the health impacts of parks and trails. We found these 11 HIAs on the [Health Impact Project](#) website and by using the personal knowledge of people developing HIA practices in the United States. HIAs completed by March 2013 that addressed park and trail projects were selected for review. The HIA recommendations and the evidence on which those recommendations were based are the foundation of this toolkit.

The recommendations identify overarching strategies that have been associated with health outcomes. Each overarching strategy includes broad recommendations, examples of specific recommendations, and supporting literature.

See [Appendix B](#) for a list of the HIAs reviewed with links.

### **Recommendations**

- [1. Connectivity —incorporate park-level design that supports connectivity](#)
- [2. Access to parks- examine walking access to parks](#)
- [3. Safety - address safety concerns such as crime, vandalism, traffic, maintenance, and management](#)
- [4. Traffic injuries - encourage park and adjacent neighborhood design that protects users traveling to the parks/trails and users within parks from motor vehicle crashes](#)
- [5. Inclusive access - Provide adequate physical access to the park for everyone, regardless of user ability](#)
- [6. Equitable access - ensure equality in distribution of park access throughout the community among diverse populations](#)
- [7. Multi-functional - design park sites to promote a variety of uses and facilities](#)
- [8. Physical Activity - provide infrastructure within park sites that encourage physical activity](#)
- [9. Social Cohesion - make parks serve as neighborhood gathering spaces and social destinations](#)
- [10. Mental Health - promote parks/trails designs that improve individual mental health](#)
- [11. Outreach - undertake education and engagement activities to promote park sites](#)
- [12. Evaluation - improve surveillance and general evaluation regarding use and benefits](#)
- [13. Economy - ensure sustainability and economic growth](#)
- [14. Air and Water Quality - implement mitigation strategies for parks and trails to improve: conservation, stormwater management, and hazard mitigation](#)



## 1. Connectivity - incorporate park-level design that supports connectivity

- Support comprehensive street, sidewalk, and bike-lane networks that connect neighborhoods and destination points to parks and trails
- Ensure development codes and design guides promote connectivity as part of infill and new development
- Ensure connecting sidewalks are wide enough to support pedestrians walking in groups
- Provide frequent park/trail access points
- Coordinate transit stops with park/trail access points
- Create visible and safe pedestrian and bike routes to nearby destinations such as schools and libraries

### **Connectivity Source Materials**

#### **Peer Reviewed Literature**

Frank L, Schmid T, Sallis J, et al. 2010. Linking objectively measured physical activity with objectively measured urban form: Findings from SMARTAQ. *Am J Preven Med* 28(2) Supplement 2, Pages 117–125. Available at: <http://www.sciencedirect.com/science/article/pii/S0749379704003253> [Accessed 2012 Feb 14].

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Heath GW, Brownson RC, Kruger J, et al. ©2006. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. *J Phys Act Health* 3(Suppl 1):S55-76. Available at: <http://www.aapca3.org/resources/archival/060306/jpah.pdf> [Accessed 2011 Apr 12].

Kochtitzky CS, Freeland AL, and Yen IH. 2011. Ensuring mobility-supporting environments for an aging population: critical actors and collaborations. *J Aging Res* 2011: 138931. Available at: <http://www.hindawi.com/journals/jar/2011/138931/>

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Saelens BE and Handy SL. 2008. Built environment correlates of walking: a review. *Med Sci Sports Exerc* 40(7 Suppl): S550–66. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2921187/> [Accessed 2013 Nov 8].

Saelens BE, Sallis JF, Frank LD. 2003. Environmental correlates of walking and cycling: Findings from the transportation, urban design, and planning literatures. *Soc Behavior Med*, 25(2): 80–91. Available at: [http://link.springer.com/article/10.1207%2FS15324796ABM2502\\_03](http://link.springer.com/article/10.1207%2FS15324796ABM2502_03) [Accessed 2012 Feb 26].

Watson M and Dannenberg AL. 2008. Investment in safe routes to school projects: public health benefits for the larger community. *Prev Chronic Dis* 5(3): A90. Available at: [http://www.cdc.gov/pcd/issues/2008/jul/07\\_0087.htm](http://www.cdc.gov/pcd/issues/2008/jul/07_0087.htm) [Accessed 2011 Jul 19].

#### **Federal Recommendations/Strategies/Reports**

Centers for Disease Control and Prevention. 2010. Recommendations for Improving health through transportation policy. Available at <http://www.cdc.gov/transportation/docs/FINAL%20CDC%20Transportation%20Recommendations-4-28-2010.pdf> [Accessed 2012 Feb 26].

Guide to Community Preventive Services. 2011. Environmental and policy approaches to increase physical activity: community-scale urban design land use policies. <http://www.thecommunityguide.org/pa/environmental-policy/communitypolicies.html> [Accessed 2012 Aug 6].

White House Task Force on Childhood Obesity. 2010. Report to the President: Solving the problem of childhood obesity within a generation. May:49-63. Available at: [http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce\\_on\\_Childhood\\_Obesity\\_May2010\\_FullReport.pdf](http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce_on_Childhood_Obesity_May2010_FullReport.pdf) [Accessed 2012 Feb 26].

US Department of Transportation. 2010. Federal Highway Administration. Policy statement on bicycle and pedestrian accommodation regulations and recommendations. Available at: [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/overview/policy\\_accom.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm) [Accessed 2013 Nov 8].

#### Literature from Supporting Organizations

Active Living Research. Designing for active transportation. 2005. San Diego, CA. Available at: <http://www.rwjf.org/en/research-publications/find-rwjf-research/2005/02/designing-for-active-transportation.html> [Accessed 2013 Nov 8].

[ITE] Institute of Transportation Engineers. 2010. Designing walkable urban thoroughfares: A context sensitive approach. Washington DC: Publication No. RP-036A. Available at: <http://www.ite.org/css/FactSheet5.pdf> [Accessed 2014 Sept 25].

## 2. Access to parks - examine walking access to parks

- Determine the percent of population with a walk route of less than a mile to a park entrance from home. HIA #8, #9, #10

### Access to Parks Source Materials

#### References

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Lee A and Maheswaran R. 2011. The health benefits of urban green spaces: a review of the evidence. *J Pub Health*. 22 (2), 212-222. doi:10.1093/pubmed/fdq068. Available at: [http://www.wales.nhs.uk/sites3/Documents/740/Health benefits of urban green spaces - review \(2011\).pdf](http://www.wales.nhs.uk/sites3/Documents/740/Health%20benefits%20of%20urban%20green%20spaces%20-%20review%20(2011).pdf) [Accessed 2012 April 12].

Wendel AM, Dannenberg AL, Frumkin H. 2008. Designing and building healthy places for children. *Int J Environ Health* Vol. 2(3/4):338–55. Available at: [http://www.cdc.gov/healthyplaces/publications/designing\\_and\\_building\\_healthy\\_places\\_for\\_children.pdf](http://www.cdc.gov/healthyplaces/publications/designing_and_building_healthy_places_for_children.pdf) [Accessed 2012 Aug 15].

#### *Federal Recommendations/Strategies/Reports*

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White House Task Force on Childhood Obesity. Solving the problem of childhood obesity within a generation: The White House Task Force on Childhood Obesity Report to the President. May 2010. Available at [http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce\\_on\\_Childhood\\_Obesity\\_May2010\\_FullReport.pdf](http://www.letsmove.gov/sites/letsmove.gov/files/TaskForce_on_Childhood_Obesity_May2010_FullReport.pdf) [Accessed 2012 Feb 6].

America's great outdoors: A promise to future generations. Available at: <http://www.doi.gov/americasgreatoutdoors/documents/upload/AGO-Report-Chapters-1-10-Only-Text-Only-2-7-11.pdf> [Accessed 2013 Nov 6].

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### 3. Safety - address safety concerns such as crime, vandalism, traffic, maintenance, and management:

- Create natural surveillance along trails, in parks, and along abutting streets, connecting streets, and street crossings
- Ensure proper sight lines and increase "eyes on the street" to facilitate roadway surveillance around parks and trails
- Include entrances and windows that face the park or trail in adjacent buildings
- Design park/trail paths to support multiple uses while ensuring users feel safe
- Install emergency call boxes or cameras, or both, in parks and trails
- Consider the effect of pathway width on social supports like walking in groups

#### **Safety Source Materials**

#### **Peer Reviewed Literature**

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#### *Literature from Supporting Organizations*

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#### 4. Traffic injuries - encourage park and adjacent neighborhood design that protects users traveling to the parks/trails and users within parks from motor vehicle crashes:

- Account for pedestrian and bicycle vulnerabilities with streetscape design around and in parks and on trails, emphasizing increased visibility, route signage, and buffer zones
- Reduce traffic speeds adjacent to parks and trails (add specific methods – e.g. traffic calming)
- Street crossings along walk routes are designed so that pedestrians cross no more than 2 lanes of traffic without a protected refuge area.

#### **Traffic Injuries Source Materials**

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#### **Tools**

US Department of Transportation. 2007. Federal Highway Administration. Pedestrian road safety audit guidelines and prompt lists. Available at: <http://katana.hsrc.unc.edu/cms/downloads/PedRSA.reduced.pdf>. [Accessed 2011 July 18].

This report is a guide to pedestrian needs in assessing roadway safety. A road safety audit is a formal safety performance evaluation of an existing or future roadway or intersection.

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This tool assists in the development of databases that track location and crash type for traffic crashes involving bicyclists and pedestrians. The tool can analyze data and produce reports on crash characteristics.

## 5. Inclusive access - Provide adequate physical access to the park for everyone, regardless of user ability:

- Parks and trails should meet or exceed Americans with Disabilities Act (ADA) standards

### **Inclusive Access Source Materials**

#### **Peer Reviewed Literature**

##### *Federal Recommendations/Strategies/Reports*

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#### **Tools**

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## 6. Equitable access - ensure equality in distribution of park access throughout the community among diverse populations:

- Ensure public participation in park/trail planning and decision making
- Ensure policies regarding park access take into account the walk-route distance when measuring park access
- Support creation of park/trails that are accessible and relevant to surrounding neighborhoods and diverse populations
- Include health equity in criteria used to evaluate and prioritize projects

### **Equitable Access Source Materials**

#### **Peer Reviewed Literature**

Cohen D, McKenzie T, Sehgal A, et al. 2007. Contribution of parks to physical activity. Am J Pub Health 97:509–14. Available at: <http://ajph.aphapublications.org/doi/full/10.2105/AJPH.2005.072447> [Accessed 2013 Nov 8].

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<http://cloud.tpl.org/pubs/benefits-park-benefits-white-paper12005.pdf> [Accessed 2012 April 11].

### **Tools**

National Environmental Public Health Tracking Program: <http://www.cdc.gov/nceh/tracking/default.htm>

## 7. Multi-functional - design park sites to promote a variety of uses and facilities

- Provide multiple amenities in parks to attract users
- Provide a range of facilities with a wide variety of uses that draws diverse populations throughout the day and seasons of the year.
- Provide site facilities/features in park sites such as seating, drinking fountains, shaded areas, open play fields, picnic areas, and trash receptacles
- Better utilize existing play spaces. Enter into Joint Use Agreements that allow area school grounds to be used by the general public during non-school daylight hours
- Explore using public/private partnerships for enhanced food experiences to enliven parks and reinforce them as places of community gathering, e.g., farmer's markets/community gardens
- Provide structured classes and activities within park sites to encourage community use

### **Multi-functional Source Materials**

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Rung A, Mowen A, Broyles S, et al. 2010. The influence of park conditions and supporting features on park-based physical activity. Presented at the Active Living Research Annual Conference, San Diego, CA. Available at: [http://www.activelivingresearch.org/files/2010\\_ParksTrails\\_Rung.pdf](http://www.activelivingresearch.org/files/2010_ParksTrails_Rung.pdf) [Accessed 2012 April 11].

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#### *Potential Resources for Creating Additional Park Areas*

Neighborhood Revitalization Initiative – (Sponsoring Federal Agencies: White House Initiative with Cross Agency Participation) Available at: [http://www.whitehouse.gov/sites/default/files/nri\\_description.pdf](http://www.whitehouse.gov/sites/default/files/nri_description.pdf) [Accessed 2012 Aug 15].

Sustainable Communities Partnership's regional planning grants (Sponsoring Federal Agencies: Department of Housing and Urban Development [HUD], DOT, and EPA). Available at: [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/sustainable\\_housing\\_communities/sustainable\\_communities\\_regional\\_planning\\_grants](http://portal.hud.gov/hudportal/HUD?src=/program_offices/sustainable_housing_communities/sustainable_communities_regional_planning_grants) [Accessed 2012 Aug 15].

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Urban Waters Federal Partnership (Sponsoring Federal Agencies: US EPA-led partnership multiple other federal agencies). Available at: <http://www.urbanwaters.gov/> [Accessed 2012 Aug 15].

#### *Model Joint-Use Agreements*

Change Lab Solutions. Model Joint Use Agreement Resources: Increasing physical activity by opening up school grounds. Available at: <http://changelabsolutions.org/node/3224> [Accessed 2012 Aug 23].

## 8. Physical Activity - provide infrastructure within park sites that encourage physical activity:

- Create trails within parks
- Incorporate a variety of facilities that require varying level of difficulty, such as sports facilities (ball fields, volleyball courts, basketball, etc.); fitness stations and trails with varying difficulty, slopes, and surface materials; skate parks; and open field areas for running and unstructured play

### **Physical Activity Source Materials**

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Task Force on Community Preventive Services. Physical Activity. 2005. In: Zaza S, Briss PA, Harris KW, eds. *The Guide to community preventive services: What works to promote health?* Atlanta GA: Oxford University Press, p. 80–113. Available at: <http://www.thecommunityguide.org/library/book/Front-Matter.pdf> [Accessed 2013 Nov 8].

### *Federal Recommendations/Strategies/Reports*

Guide to Community Preventive Services. 2010. Environmental and policy approaches to increase physical activity: transportation and travel policies and practices. Available at: <http://www.thecommunityguide.org/pa/environmental-policy/travel/policies.html> [Accessed 2012 Apr 11].

Centers for Disease Control and Prevention. 2011. Communities putting prevention to work: communities addressing obesity. Available at: <http://www.cdc.gov/CommunitiesPuttingPreventiontoWork/communities/obesity.htm> [Accessed 2012 Apr 11].

Institute of Medicine. 2005. Does the built environment influence physical activity? Examining the evidence. Washington DC: National Academies Press. Available at: [http://books.nap.edu/openbook.php?record\\_id=11203&page=14](http://books.nap.edu/openbook.php?record_id=11203&page=14) [Accessed 2011 May 16].

Kahn EB, Ramsey LT, Heath GW, et al. 2001. Increasing physical activity. A report on recommendations of the Task Force on Community Preventive Services. MMWR 50(RR-18):1-16. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5018a1.htm> [Accessed 2013 Nov 8].

### *Literature from Supporting Organizations*

Godbey G. and Mowen AJ. 2010. The benefits of physical activity provided by park and recreation services: The scientific Evidence. [Research Series] National Recreation and Parks Association. Available at: [http://www.nrpa.org/uploadedFiles/nrpa.org/Publications\\_and\\_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf](http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf) [Accessed 2013 Nov 8].

Mowen AJ. 2010. Parks, playgrounds and active living. Robert Wood Johnson Foundation. Available at: [http://activelivingresearch.org/files/Synthesis\\_Mowen\\_Feb2010.pdf](http://activelivingresearch.org/files/Synthesis_Mowen_Feb2010.pdf) [Accessed 2013 Nov 8].

### **Tools**

New York City Department of Design and Construction. 2011. Active design guidelines. Available at: [http://www.nyc.gov/html/ddc/html/design/active\\_design.shtml](http://www.nyc.gov/html/ddc/html/design/active_design.shtml) [Accessed 2012 Apr 11]. This is a manual of design strategies for buildings, streets, and urban spaces to promote physical activity and healthier lifestyles.

## 9. Social Cohesion - make parks serve as neighborhood gathering spaces and social destinations:

- Provide park amenities that promote opportunities for gatherings
- Allow permits to reserve parks and trails for activities and gatherings within the park or on surrounding streets
- Design parks to accommodate festivals, street fairs, and other community events.
- Support use of parks for community festivals, events, and gatherings

### **Social Cohesion Source Materials**

#### **Peer Reviewed Literature**

Wood L, Frank LD, Giles-Corti B. 2010. Sense of community and its relationship with walking and neighborhood design. Soc Sci Med 70 (9):1381–90. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/20189699> [Accessed 2012 April 11].

Peters K, Elands B, Buijs A. 2010. Social interactions in urban parks: Stimulating social cohesion? Urban Forestry & Urban Greening 9(2):93-100. Available at: <http://www.sciencedirect.com/science/article/pii/S1618866709000855> [Accessed 2012 Apr 11].

Bell S, Hamilton V, Montarzino A, et al. 2008. Greenspace and quality of life: a critical literature review. Greenspace Scotland. Available at: [http://www.openspace.eca.ac.uk/pdf/appen dixf/OPENspacewebsite APPENDIX F resource 9.pdf](http://www.openspace.eca.ac.uk/pdf/appen%20dixf/OPENspacewebsite_APPENDIX_F_resource_9.pdf) [Accessed 2012 Apr 12].

Leyden KM. 2007. Social capital and the built environment: The importance of walkable neighborhoods. Am J Public Health 93(9):1546–51. Available at: <http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.93.9.1546> [Accessed 2012 Apr 11].

## 10. Mental Health - promote parks/trails designs that improve individual mental health:

- Provide places within the park for relaxation and meditation to address: depression, stress reduction, and improved healing. HIA#11
- Provide opportunities to observe other people.
- Include strategies for increased views of greenspace, water, wildlife habitat for mental health benefits.

### **Mental Health Source Materials**

#### **References**

Bell S, Hamilton V, Montarzino A, et al. 2008. Greenspace and quality of life: a critical literature review. Greenspace Scotland. Available at: [http://www.openspace.eca.ac.uk/pdf/appen dixf/OPENspacewebsite\\_APPENDIX\\_F\\_resource\\_9.pdf](http://www.openspace.eca.ac.uk/pdf/appen%20dixf/OPENspacewebsite_APPENDIX_F_resource_9.pdf) [Accessed 2012 April 12].

Faber Taylor A and Kuo F. 2006. Is contact with nature important for healthy child development? State of the evidence. In: Spencer C and Blades M, eds. Children and their environments: Learning, using and designing spaces. Cambridge UK: Cambridge University Press. Available at: <http://lhl.illinois.edu/all.scientific.articles.htm> [Accessed 2012 Apr 12].

[HCNDACRSP] Health Council of the Netherlands and Dutch Advisory Council for Research on Spatial Planning Nature and the Environment. 2004. Nature and health: The influence of nature on social, psychological and physical wellbeing. The Hague: Health Council of the Netherlands and RMNO. Available at: <http://www.gezondheidsraad.nl/sites/default/files/Nature%20and%20health.pdf> [Accessed 2012 Apr 12].

Kuo F. 2010. Parks and other green environments: Essential components of a healthy human habitat. Available at: [http://www.nrpa.org/uploadedFiles/nrpa.org/Publications\\_and\\_Research/Research/Papers/MingKuo-Research-Paper.pdf](http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/MingKuo-Research-Paper.pdf) [Accessed 2013 Nov 15].

Maller C, Townsend M, St. Leger L, et al. 2008. The health benefits of contact with nature in a park context: A review of relevant literature. Available at: <http://www.georgewright.org/262maller.pdf> [Accessed 2012 Apr 12].

Townsend M and Weerasuriya R. 2010. Beyond blue to green: The benefits of contact with nature for mental health and well-being. Melbourne, Australia. Available at: [http://www.hphpcentral.com/wp-content/uploads/2010/09/beyondblue\\_togreen.pdf](http://www.hphpcentral.com/wp-content/uploads/2010/09/beyondblue_togreen.pdf) [Accessed 2013 Nov 15].

Wolf KL and Flora K. 2010. Mental Health and Function—A Literature Review. In: Green cities: Good health. University of Washington College of the Environment. Available at: [http://depts.washington.edu/hhwb/Thm\\_Mental.html](http://depts.washington.edu/hhwb/Thm_Mental.html) [Accessed 2012 April 12].

## 11. Outreach - undertake education and engagement activities to promote park sites:

- Promote parks/outdoor spaces through a variety of outreach efforts such as environmental education, historical education/conservation, and physical activity campaigns
- Provide signs in strategic locations that provide information about the park facilities/features, programs, and contacts
- Include park maps as part of entrance signage
- Provide brochures site facilities and programs
- Provide web links to maps showing park locations with links to key visitor information.

### **Outreach Source Materials**

#### **Peer Reviewed Literature**

Hoehner C, Brownson R, Gramann J, et al. 2010. Parks promoting physical activity: Synthesis of findings from interventions in seven national parks. J Phys Act Health 7 Suppl (Mar) 1:S67-81.

Kahn E, et al. The effectiveness of interventions to increase physical activity: a systematic review. Am J Prev Med 2002, 22(4 Suppl):73-107. Available at: <http://www.thecommunityguide.org/pa/pa-ajpm-evrev.pdf> [Accessed 2012 Apr 12].

Mowen A, Payne L, Orsega-Smith B, et al. 2009. Assessing the health partnership practices of park and recreation agencies: Findings and implications from a national survey. J Park Recreat Admi 27(3):116-31. Available at: <http://js.sagamorepub.com/jpra/article/view/1284> [Accessed 2012 Apr 11].

Task Force on Community Preventive Services. 2002. Recommendations to increase physical activity in communities. Am J Prev Med 22 (48):67-72. Available at: <http://www.thecommunityguide.org/pa/pa-ajpm-recs.pdf> [Accessed 2012 Apr 12].

#### Literature from Supporting Organizations

Godbey G and Mowen A. 2010. The benefits of physical activity provided by park and recreation services: The scientific Evidence. [Research Series] National Recreation and Parks Association. Available at: [http://www.nrpa.org/uploadedFiles/nrpa.org/Publications\\_and\\_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf](http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf) [Accessed 2013 Nov 8].

#### Sample Campaigns

<http://www.cdc.gov/youthcampaign/>

<http://www.letsmove.gov/lets-move-outside>

<http://www.nrpa.org/health>



## 12. Evaluation - improve surveillance and general evaluation regarding use and benefits:

- Monitor and evaluate park/trail use
- Conduct pre-and post-tests or surveys
- Identify project goals
- Establish measures to evaluate impacts
- Create an evaluation plan identifying who will be responsible for data collection, analysis, and reports.

### **Evaluation Source Materials**

#### **Peer Reviewed Literature**

Hoehner C, Brownson R, Gramann J, et al. 2010. Parks promoting physical activity: Synthesis of findings from interventions in seven national parks. J Phys Act Health Suppl (Mar 7) 1:S67-81.

#### Literature from Supporting Organizations

Godbey G and Mowen A. 2010. The benefits of physical activity provided by park and recreation services: The Scientific Evidence. [Research Series] National Recreation and Parks Association. Available at: [http://www.nrpa.org/uploadedFiles/nrpa.org/Publications\\_and\\_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf](http://www.nrpa.org/uploadedFiles/nrpa.org/Publications_and_Research/Research/Papers/Godbey-Mowen-Research-Paper.pdf) [Accessed 2013 Nov 8].

Christin, Z. B.-C. (2011). Economic Impact of Metro Parks Tacoma Ecosystem. Tacoma, WA: Earth Economics.

South Bend Parks and Recreation Department. Healthy Communities Surveillance and Management Toolkit, Feb 2012. Available at: [http://www.gpred.org/siteadmin/images/files/file\\_113.pdf](http://www.gpred.org/siteadmin/images/files/file_113.pdf) [Accessed 2013 Nov 15].

Amherst, Appomattox, Bedford, & Campbell Counties and Cities of Bedford and Lynchburg. Region 2000 Greenways & Blueways Plan 2003. Appendices B and C. Available at: <http://www.region2000.org/assets/files/lgc/Greenways%20Blueways%20Plan.pdf>.

### **Tools**

Recommended Community Strategies and Measurements to Prevent Obesity in the United States MMWR  
<http://www.cdc.gov/mmwr/pdf/rr/rr5807.pdf>.

A number of evaluative tools are available on the Robert Wood Johnson Foundation Active Living Research Web site. Available at: <http://activelivingresearch.org/toolsandresources/toolsandmeasures>.

Active Where? Surveys. Available at <http://activelivingresearch.org/node/11951>

Environmental Assessment of Public Recreation Spaces (EAPRS). Available at: <http://activelivingresearch.org/node/10651>

Path Environment Audit Tool (PEAT). Available at: <http://activelivingresearch.org/node/10652>.

System for Observing Play and Recreation in Communities (SOPARC). Available at: <http://activelivingresearch.org/node/10654>

Core Measures of Trail Use. Available at: <http://activelivingresearch.org/node/10653>

Twin Cities Walking Survey. Available at: <http://activelivingresearch.org/node/10619>

Built Environment Assessment Training Institute, University of Pennsylvania. Available at: <http://www.med.upenn.edu/beat/>.

i-Tree, urban forest analysis software, US Forest Service. Available at: <http://www.itreetools.org/>

Physical Activity Resource Assessment tool (PARA). Available at: [http://grants.hhp.coe.uh.edu/undo/?page\\_id=21](http://grants.hhp.coe.uh.edu/undo/?page_id=21)

Organize stakeholder photograph exercises (target groups will submit photographs showing appropriate park/trail use and activities/benefits they want to model in their planned locations; also activities or experiences they see as barriers to park/trail use, including a brief statement describing each photograph)

Walking Audits—Numerous organizations, including Walkable and Livable Communities Institute. Available at: <http://www.walklive.org/>

The Pedestrian and Bicycle Information Center. Available at: <http://www.walkinginfo.org/promote/strategies.cfm>

San Francisco Board of Health Healthy Development Measurement Tool (HDMT). Available at: <http://www.sustainablecommunitiesindex.org/>

Visual Preference surveys:

- Orton Family Foundation. Available at: <http://www.planningtoolexchange.org/tool/visual-preference-surveys>
- US DOT. Available at: [http://www.planning.dot.gov/PublicInvolvement/pi\\_documents/4c-g.asp](http://www.planning.dot.gov/PublicInvolvement/pi_documents/4c-g.asp)

### **Suggested Further Actions**

Conduct systematic user counts

Administer original community/user surveys

Develop community design inventories

Conduct an assessment of the population that has a walk route of less than a half-mile to a park or trail entrance

### 13. Economy - ensure sustainability and economic growth:

- Expand economic opportunities in surrounding neighborhoods. HIA #10, 11
- Increase park sustainability through providing opportunities for affordable housing, park conservancies, and community gardening. HIA #9,

#### **Economy Source Materials**

#### **References**

Been V and Voicu I. 2008. The effect of community gardens on neighboring property values. *Real Estate Economics* 36(2):241–83. DOI: 10.1111/j.1540-6229.2008.00213.x. Available at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6229.2008.00213.x/full> [Accessed 2012 April 12].

Wachter S. 2005. The determinates of neighborhood transportations in Philadelphia identification and analysis: the Kensington Pilot Study. University of Pennsylvania: The Wharton School. Available at: [http://kabaffiliates.org/uploadedFiles/KAB\\_Affiliates.org/Wharton%20Study%20NK%20final.pdf](http://kabaffiliates.org/uploadedFiles/KAB_Affiliates.org/Wharton%20Study%20NK%20final.pdf) [Accessed 2012 April 12].

#### *Literature from Supporting Organizations*

Active Living Research. 2010. The economic benefits of open space, recreation facilities and walkable community—Research Synthesis. Robert Wood Johnson Foundation. Available at: <http://activelivingresearch.org/economic-benefits-open-space-recreation-facilities-and-walkable-community-design>. [Accessed 2013 Nov 15].

Been V and Voicu I. 2007. The effect of community gardens on neighboring property. New York University: Furman Center for Real Estate & Urban Policy. Available at: [http://furmancenter.org/files/publications/The\\_Effect\\_of\\_Community\\_Gardens\\_combined.pdf](http://furmancenter.org/files/publications/The_Effect_of_Community_Gardens_combined.pdf)

Harkin P and Welle B. 2009. Measuring the economic value of a city park system. [online.] Trust for Public Lands. Available at: <http://cloud.tpl.org/pubs/ccpe-econvalueparks-rpt.pdf>. [Accessed 2012 Apr 12].

H. John Heinz III School of Public Policy and Management. 2006. Vacant to vibrant: A guide to revitalizing vacant lots in your neighborhood. Carnegie Mellon University. Available at: <http://gtechstrategies.org/wp-content/uploads/2013/10/VacanttoVibrant.pdf> [Accessed 2013 Nov 15].

H. John Heinz III School of Public Policy and Management. 2006. Policy recommendations: Greening vacant lots for Pittsburgh's sustainable neighborhood revitalization. Carnegie Mellon University. Available at: <http://gtechstrategies.org/wp-content/uploads/2013/10/PolicyRecommendations.pdf> [Accessed 2013 Nov 15].

#### *Examples*

Philadelphia Clean and Green Vacant Lot Initiative—Available at <http://www.nextgreatcity.com/actions/lots>

US Forest Service: urban forestry analysis and benefits assessment tool—Available at <http://www.itreetools.org/>

## 14. Air and Water Quality - implement mitigation strategies for parks and trails to improve: conservation, stormwater management, and hazard mitigation:

- Design the potential park and trails to minimize areas with loose soil.
- Promote tree canopy particularly along park boundaries.
- Maintain forest patches.
- Slope trails away from stream banks and where possible establish shallow swales along the uphill shoulder.
- Utilize plants that are indigenous and do not require fertilizer.
- Add a bus stop near the potential park so that people can utilize public transportation to get to the park.

### **Air and Water Quality Source Materials**

#### **References**

##### *Air and Water Quality*

Environmental Impacts Analysis Unit Minnesota Department of Health Environmental Health Division. 2011. St. Louis Park Comprehensive Plan Health Impact Assessment. Minnesota Department of Health. Available at: [http://www.health.state.mn.us/divs/hia/docs/slp\\_hia.pdf](http://www.health.state.mn.us/divs/hia/docs/slp_hia.pdf) [Accessed 2013 April 11].

Nowak, D. J. 1995. Urban Trees and Air Quality. USDA Forest Service, Syracuse, NY.

Sherer, P. (2006). The Benefits of Parks: why America needs more city parks and open space. Citizens for East Shore Park. Available at: [http://www.eastshorepark.org/benefits\\_of\\_parks%20tpl.pdf](http://www.eastshorepark.org/benefits_of_parks%20tpl.pdf) [Accessed 2012 Nov 6].

##### *Stormwater Management and Ecological Habitat*

Bell S, Hamilton V, Montarzino A, et al. 2008. Greenspace and quality of life: a critical literature review. Greenspace Scotland. Available at: [http://www.openspace.eca.ac.uk/pdf/appen%20dix/OPENspacewebsite\\_APPENDIX\\_F\\_resource\\_9.pdf](http://www.openspace.eca.ac.uk/pdf/appen%20dix/OPENspacewebsite_APPENDIX_F_resource_9.pdf) [Accessed 2012 12 Apr].

Flink CA, Searns RM, Schwarz LLB, eds. 1993. Greenways: A guide to planning design and development. Washington DC: Island Press.

Grumbles BH. 2007. AAUEPA. Using green infrastructure to protect water quality in stormwater, CSO, nonpoint source and other water programs. Available at: [http://water.epa.gov/infrastructure/greeninfrastructure/upload/greeninfrastructure\\_h2oprograms\\_07.pdf](http://water.epa.gov/infrastructure/greeninfrastructure/upload/greeninfrastructure_h2oprograms_07.pdf) [Accessed 2013 Nov 15].

Tzoulas K, Korpela K, Venn S, et al. 2007. Promoting ecosystem and human health in urban areas using Green Infrastructure: A literature review. Landsc Urban Plan 81:167–78. Available at: <http://www.sciencedirect.com/science/article/pii/S0169204607000503> [Accessed 2012 Feb 14].

San Diego Civic Solutions. 2006. Canyonlands: The creation of San Diego Regional Canyonlands Park. Available at: <http://www.sdcanyonlands.org/images/pdfs/canyonlandswitepaper.pdf>. [Accessed 2013 Nov 15].

#### **Tools**

Conservation tools available at: <http://conservationtools.org/>

## Section D: Additional Topic Areas

The HIAs we reviewed for this Toolkit address several significant issues and provide recommendations directly related to the public health role of parks and trails. Issues include community redevelopment, quality of life, resource conservation or management, hazard mitigation, economic benefit, and air and water quality. Currently available evidence-based data demonstrate the role parks may play in many of these issues. The resources below may help provide background for potential HIA recommendations.

### 1. Brownfield redevelopment and resource management

#### References

##### Brownfields

Litt JS, Tran NL, Burke TA. 2002. Examining urban brownfields through the public health "macroscope." *Environ Health Perspect* 110 Suppl 2:183–93. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241162/pdf/ehp110s-000183.pdf> [Accessed 2012 Apr 11].

Siikamäki J and Wernstedt K. 2008. Turning brownfields into greenspaces: Examining incentives and barriers to revitalization. *J Health Polit Policy Law*, 33(3), 559–593. Available at: [http://activelivingresearch.org/files/8\\_JHPPL\\_Wernstedt.pdf](http://activelivingresearch.org/files/8_JHPPL_Wernstedt.pdf).

US Environmental Protection Agency. 2008. About brownfields. Washington DC: Brownfields and Land Revitalization program. 2008. Available at: <http://www.epa.gov/brownfields/>

### 2. Parks/trails and urban heat islands

#### References

Jo HK. 2002. Impacts of urban greenspace on offsetting carbon emissions for middle Korea. *J Environ Manage*;64:115–26. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.155.7&rep=rep1&type=pdf> [Accessed 2012 Apr 11].

Younger M, Morrow-Almeida HR, Vindigni SM, et al. 2008. The built environment, climate change, and health: Opportunities for co-benefits. *Am J Prev Med* 35(5):517–26. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/18929978>. [Accessed 2012 Apr 11].

##### *Federal Recommendations/Strategies/Reports:*

US Environmental Protection Agency. Reducing Urban Heat Islands: Compendium of Strategies - Trees and Vegetation. Available at: <http://www.epa.gov/hiri/resources/pdf/TreesandVegCompendium.pdf>. [Accessed 2013 Nov 18].

US Environmental Protection Agency. Urban Heat Island Mitigation. Available at: <http://www.epa.gov/hiri/mitigation/index.htm>. [Accessed 2013 Nov 18].

##### *Literature from Supporting Organizations*

Greenspace Scotland. 2011. Developing the role of greenspace in climate change mitigation and adaptation. Available at: <http://www.greenspacescotland.org.uk/SharedFiles/Download.aspx?pageid=133&mid=129&fileid=49>. [Accessed 2012 Mar 2].

Groth P, Miller R, Nadkarni N, et al. 2008. Quantifying the greenhouse gas benefits of urban parks. [White Paper]. Trust for Public Lands. Available at: [http://cloud.tpl.org/pubs/benefits\\_greenhouse\\_gases\\_and\\_parks\\_whitepaper.pdf](http://cloud.tpl.org/pubs/benefits_greenhouse_gases_and_parks_whitepaper.pdf). [Accessed 2012 Feb 14].

APA Green Infrastructure Planning Advisory Study 2013.

## Appendix A – Method used to develop toolkit content

### Parks HIA Toolkit – Development Process

1. We scanned HIAs that had been completed by the spring of 2013, and identified and reviewed in depth 11 HIAs related to parks, greenspace, and trails. We used these HIAs as the primary source material for this Toolkit.
2. We extracted key recommendations made by practitioners and the references they used.
3. We organized the strategies into three layers:
  - a. **Layer one** – overarching strategy themes associated with health outcomes
  - b. **Layer two** – broad recommendations (what the literature base supports)
  - c. **Layer three** – examples of specific recommendations
4. Evidence-base data we used to identify strategies:
  - a. Peer Reviewed Literature
    - 1) Primarily, systematic reviews and meta-analysis identified during the scan of the source HIAs, supplemented by material found in:
      - i. Green Cities: Good Health
      - ii. Institute of Medicine's (IOM) Report on Built Environment + Physical Activity
  - b. Federal Recommendations/Strategies/Reports
    - 1) CDC's Community Guide
    - 2) CDC's Transportation + Health Recommendations
    - 3) National Prevention Strategy
    - 4) National Obesity Taskforce
    - 5) America's Great Outdoors
  - c. Literature from Supporting Organizations
    - 1) Trust for Public Lands
    - 2) National Recreation and Park Association
    - 3) Children & Nature Network
    - 4) Society of Outdoor Recreation Professionals
    - 5) National Environmental Education Foundation (fact sheet "Children's Health and Nature")
    - 6) Active Living Research
    - 7) University of Illinois – Landscape and Human Health Laboratory

## Appendix B - Health Impact Assessments reviewed for the HIA Parks, Greenways, and Trails HIA Toolkit

1. Atlanta BeltLine, Atlanta, GA, 2007. HIA Report available at: <http://www.healthimpactproject.org/hia/us/atlanta-beltline>
2. East Bay Greenway, Oakland, CA, 2007. HIA Report available at: <http://www.healthimpactproject.org/hia/us/east-bay-greenway>
3. Using HIA to Determine the Potential Health Impacts of Revitalizing Boxers' Trail, Philadelphia, PA, 2008. No URL available.
4. Clark County Bicycle and Pedestrian Master Plan, Clark County, WA, 2010. HIA Report available at: [http://www.co.clark.wa.us/public-health/reports/documents/FINAL\\_RapidHIA.pdf](http://www.co.clark.wa.us/public-health/reports/documents/FINAL_RapidHIA.pdf)
5. Marquette County Ice Age National Scenic Trail Expansion, Marquette County, WI, 2011. HIA Report available at: <http://www.healthimpactproject.org/resources/document/Health-Impact-Assessment-of-the-Ice-Age-Trail-WI.pdf>
6. Knox County Health Department Community Garden, Knox County, TN, 2010. HIA Report available at: <http://www.healthimpactproject.org/hia/us/knox-county-health-department-community-garden>
7. HOPE VI to HOPE SF: San Francisco Public Housing Redevelopment, San Francisco, CA, 2009. HIA Report available at: <http://www.healthimpactproject.org/hia/us/hope-vi-to-hope-sf-san-francisco-public-housing-redevelopment>
8. St. Louis Park Comprehensive Plan HIA, City of St. Louis Park, MN, 2011. HIA Report available at: [http://www.health.state.mn.us/divs/hia/docs/slp\\_hia.pdf](http://www.health.state.mn.us/divs/hia/docs/slp_hia.pdf)
9. Adams Park Master Plan, Douglas County, NE, 2012. HIA Report available at: [http://www.douglascountyhealth.com/images/stories/Healthy%20Community/Adams%20Park%20Summary%20revised%2010\\_29\\_12.pdf](http://www.douglascountyhealth.com/images/stories/Healthy%20Community/Adams%20Park%20Summary%20revised%2010_29_12.pdf)
10. Quequechan River Rail Trail, Fall River, MA, 2012. HIA Report available at: <http://www.mapc.org/quequechan-river-rail-trail-hia>
11. Planning for Parks, Green Space, and Trails in Greenville's West Side, Greenville, South Carolina, 2013. HIA Report available at: <http://www.healthimpactproject.org/resources/body/HIA-of-Park-Trail-and-Green-Space-Planning-in-Greenville-SC.pdf>

### Note:

The above HIAs were found as of March 2013 through a variety of sources. For a comprehensive list of HIAs completed in the US that is continuously updated by Health Impact Project, go to: <http://www.healthimpactproject.org/hia/us>. This searchable database includes reports that are self-titled "health impact assessments" (HIA) for which the Health Impact Project has identified an HIA report. The Web page is based on information collected from a variety of sources. The reports included have not been reviewed or evaluated by the Health Impact Project for content, including to determine whether they meet an accepted definition or practice standard for HIA. The information included in this database is taken from published information about each HIA and, in some cases, conversations with those involved in drafting them. The Health Impact Project welcomes any suggested corrections, updates, or additions to this information. Please contact Health Impact Project at [healthimpactproject@pewtrusts.org](mailto:healthimpactproject@pewtrusts.org). This searchable database was created through a partnership between Health Impact Project and Centers for Disease Control and Prevention's (CDC) Healthy Community Design Initiative.

*Learn more about this work at*

[http://www.cdc.gov/healthyplaces/parks\\_trails/](http://www.cdc.gov/healthyplaces/parks_trails/)